CLAIMS

What is claimed is:

1. In combination, a semiconductor substrate singulation saw and a chuck for holding a substrate comprising:

a saw having at least one blade supported above a table and oriented to cut mutually parallel paths in the surface of a semiconductor substrate positioned on said table; and

a chuck having at least one cutting pedestal located thereon mounted on said table, said chuck for holding said substrate during the cutting thereof by said saw.

2. The combination of claim 1, wherein said chuck further comprises:

a chuck table; and

a plurality of cutting pedestals, each cutting pedestal being mounted on said chuck table.

3. The combination of claim 2, wherein said chuck further comprises:

at least one clamp pedestal; and

at least one substrate clamp removable attached to a portion of the at least one clamp pedestal.

4. The combination of claim 3, wherein said chuck further comprises:

at least one alignment apparatus having a portion attached to the chuck table.

5. The combination of claim 4, wherein said alignment apparatus comprises:

at least one alignment pin having a portion for engaging a portion of a substrate.

6. The combination of claim 4, wherein said alignment apparatus comprises:

an aperture in the chuck table for receiving said substrate therein.

7. The combination of claim 4, wherein said alignment apparatus comprises:

a pair of alignment pins, each alignment pin having a portion thereof attached to the chuck table and a portion for engaging a portion of said substrate.

8. The combination of claim 1, the saw further comprising:
at least two blades for sawing said substrate.

9. The combination of claim 8, wherein at least one of said at least two blades is laterally translatable relative to another of said at least two blades.

10. The combination of claim 9, wherein at least one of said at least two blades is raisable relative to another of said at least two blades.

11. The combination of claim 8, wherein said table is translatable in at least one direction relative to said at least two blades.

12. The combination of claim 8, wherein said at least two blades are translatable in at least one direction relative to said table.

13. In combination, a semiconductor substrate singulation saw and a table for mounting a substrate comprising:
a saw having at least two blades supported above a table and oriented to cut mutually parallel paths in the surface of a semiconductor substrate positioned on said table; and
a chuck having at least one cutting pedestal located thereon mounted on said table, said chuck for holding said substrate during the cutting thereof by said saw.

14. The combination of claim 13, wherein said chuck further comprises:
a chuck table; and
a plurality of cutting pedestals, each cutting pedestal being mounted on said chuck table.

15. The combination of claim 14, wherein said chuck further comprises:
at least one clamp pedestal; and
at least one substrate clamp removable attached to a portion of the at least one clamp pedestal.

16. The combination of claim 15, wherein said chuck further comprises:
at least one alignment apparatus having a portion attached to the chuck table.

17. The combination of claim 16, wherein said alignment apparatus comprises:
at least one alignment pin having a portion for engaging a portion of a substrate.

18. The combination of claim 16, wherein said alignment apparatus comprises:
an aperture in the chuck table for receiving said substrate therein.

19. The combination of claim 16, wherein said alignment apparatus comprises:
a pair of alignment pins, each alignment pin having a portion thereof attached to the chuck table and a portion for engaging a portion of said substrate.

20. The combination of claim 13, the saw further comprising:
at least two blades for sawing said substrate.

21. The combination of claim 20, wherein at least one of said at least two blades is laterally translatable relative to another of said at least two blades.

22. The combination of claim 21, wherein at least one of said at least two blades is raisable relative to another of said at least two blades.

23. The combination of claim 20, wherein said table is translatable in at least one direction relative to said at least two blades.

24. The combination of claim 20, wherein said at least two blades are translatable in at least one direction relative to said table.

25. A chuck used for semiconductor substrate singulation for holding a substrate to be singulated in a saw having a table comprising:

a chuck having at least one cutting pedestal located thereon mounted on said table, said chuck for holding said substrate during the cutting thereof by said saw.

26. The chuck of claim 25, wherein said chuck further comprises:

a plurality of cutting pedestals, each cutting pedestal being mounted on said chuck table.

27. The chuck of claim 26, wherein said chuck further comprises:

at least one clamp pedestal; and

at least one substrate clamp removable attached to a portion of the at least one clamp pedestal.

28. The chuck of claim 27, wherein said chuck further comprises:

at least one alignment apparatus having a portion attached to the chuck table.

29. The chuck of claim 28, wherein said alignment apparatus comprises:

at least one alignment pin having a portion for engaging a portion of a substrate.

30. The chuck of claim 28, wherein said alignment apparatus comprises:

an aperture in the chuck table for receiving said substrate therein.

31. The chuck of claim 28, wherein said alignment apparatus comprises:

a pair of alignment pins, each alignment pin having a portion thereof attached to the chuck table and a portion for engaging a portion of said substrate.

32. A method for singulating a plurality of semiconductor devices located on a substrate comprising:

providing a saw having at least one blade and a table;

providing a chuck having at least one cutting pedestal located thereon mounted on the table, said chuck for holding said substrate during the cutting thereof by said saw;
providing a substrate having a plurality of semiconductor devices located thereon;
placing said substrate in the chuck;
aligning the substrate in the chuck;
supporting at least one semiconductor device on a portion of the chuck; and
sawing at least one semiconductor device from said substrate.

33. The method of claim 32, further comprising:
applying a vacuum to a portion of the at least one semiconductor device supported on a portion of the at least one cutting pedestal of the chuck.

34. The method of claim 32, further comprising:
sawing a plurality of semiconductor devices from said substrate at substantially the same time.

35. The method of claim 32, further comprising:
supporting a plurality of semiconductor devices on a portion of the chuck.

36. The method of claim 34, further comprising:
supporting a plurality of semiconductor devices on portions of the chuck during the sawing thereof from said substrate.

37. A method for singulating a plurality of semiconductor devices located on a substrate comprising:
providing a saw having at least two blades and a table;
providing a chuck having at least two cutting pedestals located thereon mounted on the table, said chuck for holding said substrate during the cutting thereof by said saw;
providing a substrate having a plurality of semiconductor devices located thereon;
placing said substrate in the chuck;

aligning the substrate in the chuck;

supporting at least two semiconductor devices on portions of the chuck; and

sawing at least two semiconductor devices from said substrate.

38. The method of claim 37, further comprising:

applying a vacuum to a portion of the at least two semiconductor devices supported on portions of the at least one cutting pedestal of the chuck.

39. The method of claim 37, further comprising:

sawing more than two semiconductor devices from said substrate at substantially the same time.

40. The method of claim 37, further comprising:

supporting more than two semiconductor devices on a portion of the chuck.

41. The method of claim 37, further comprising:

supporting a plurality of more than two semiconductor devices on portions of the chuck during the sawing thereof from said substrate.

42. An apparatus for singulation of a semiconductor substrate comprising:

a saw having at least one blade supported above a table and oriented to cut mutually parallel paths in the surface of a semiconductor substrate positioned on said table; and

a chuck having at least one cutting pedestal located thereon mounted on said table, said chuck for holding said substrate during the cutting thereof by said saw.

43. The apparatus of claim 42, wherein said chuck further comprises:

a chuck table; and

a plurality of cutting pedestals, each cutting pedestal being mounted on said chuck table.

44. The apparatus of claim 42, wherein said chuck further comprises:
at least one clamp pedestal; and
at least one substrate clamp removable attached to a portion of the at least one clamp pedestal.

45. The apparatus of claim 44, wherein said chuck further comprises:
at least one alignment apparatus having a portion attached to the chuck table.

46. The apparatus of claim 45, wherein said alignment apparatus comprises:
at least one alignment pin having a portion for engaging a portion of a substrate.

47. The apparatus of claim 45, wherein said alignment apparatus comprises:
an aperture in the chuck table for receiving said substrate therein.

48. The apparatus of claim 45, wherein said alignment apparatus comprises:
a pair of alignment pins, each alignment pin having a portion thereof attached to the chuck table and a portion for engaging a portion of said substrate.

49. The apparatus of claim 42, the saw further comprising:
at least two blades for sawing said substrate.

50. The apparatus of claim 49, wherein at least one of said at least two blades is laterally translatable relative to another of said at least two blades.

51. The apparatus of claim 50, wherein at least one of said at least two blades is raisable relative to another of said at least two blades.

52. The apparatus of claim 49, wherein said table is translatable in at least one direction relative to said at least two blades.

53. The apparatus of claim 49, wherein said at least two blades are translatable in at least one direction relative to said table.

54. An apparatus for the singulation of a substrate comprising:

a saw having at least two blades supported above a table and oriented to cut mutually parallel paths in the surface of a semiconductor substrate positioned on said table; and

a chuck having at least one cutting pedestal located thereon mounted on said table, said chuck for holding said substrate during the cutting thereof by said saw.

55. The apparatus of claim 54, wherein said chuck further comprises:

a chuck table; and

a plurality of cutting pedestals, each cutting pedestal being mounted on said chuck table.

56. The apparatus of claim 55, wherein said chuck further comprises:

at least one clamp pedestal; and

at least one substrate clamp removable attached to a portion of the at least one clamp pedestal.

57. The apparatus of claim 56, wherein said chuck further comprises:

at least one alignment apparatus having a portion attached to the chuck table.

58. The apparatus of claim 57, wherein said alignment apparatus comprises:

at least one alignment pin having a portion for engaging a portion of a substrate.

59. The apparatus of claim 57, wherein said alignment apparatus comprises:

an aperture in the chuck table for receiving said substrate therein.

60. The apparatus of claim 57, wherein said alignment apparatus comprises:

a pair of alignment pins, each alignment pin having a portion thereof attached to the chuck table and a portion for engaging a portion of said substrate.

61. The apparatus of claim 54, the saw further comprising:
at least two blades for sawing said substrate.

62. The apparatus of claim 61, wherein at least one of said at least two blades is laterally translatable relative to another of said at least two blades.

63. The apparatus of claim 62, wherein at least one of said at least two blades is raisable relative to another of said at least two blades.

64. The apparatus of claim 61, wherein said table is translatable in at least one direction relative to said at least two blades.

65. The apparatus of claim 61, wherein said at least two blades are translatable in at least one direction relative to said table.

66. A method for singulating a substrate having a plurality of semiconductor devices located thereon using a saw having at least one blade and a table having a chuck having at least one cutting pedestal, said chuck for holding said substrate, comprising:
placing said substrate in the chuck;
aligning the substrate in the chuck;
supporting at least one semiconductor device on a portion of the chuck; and
sawing at least one semiconductor device from said substrate.

67. The method of claim 66, further comprising:
applying a vacuum to a portion of the at least one semiconductor device supported on a portion of the at least one cutting pedestal of the chuck.

68. The method of claim 66, further comprising:
sawing a plurality of semiconductor devices from said substrate at substantially the same time.

69. The method of claim 66, further comprising:
supporting a plurality of semiconductor devices on a portion of the chuck.

70. The method of claim 68, further comprising:
supporting a plurality of semiconductor devices on portions of the chuck during the sawing thereof from said substrate.

71. A method for singulating a substrate having plurality of semiconductor devices using a saw having at least two blades and a table having a chuck having at least two cutting pedestals, said chuck for holding said substrate, comprising:
placing said substrate in the chuck;
aligning the substrate in the chuck;
supporting at least two semiconductor devices on portions of the chuck; and
sawing at least two semiconductor devices from said substrate.

72. The method of claim 71, further comprising:
applying a vacuum to a portion of the at least two semiconductor devices supported on portions of the at least one cutting pedestal of the chuck.

73. The method of claim 71, further comprising:
sawing more than two semiconductor devices from said substrate at substantially the same time.

74. The method of claim 71, further comprising:
supporting more than two semiconductor devices on a portion of the chuck.

75. The method of claim 71, further comprising:
supporting a plurality of more than two semiconductor devices on portions of the chuck during the sawing thereof from said substrate.